



<b>AEROSPACE MATERIAL SPECIFICATION</b>	<b>AMS5517™</b>	<b>REV. N</b>
	Issued 1941-11 Reaffirmed 2010-05 Revised 2024-04  Superseding AMS5517M	
Steel, Corrosion-Resistant, Sheet and Strip 18Cr - 8Ni (301) Cold Rolled, 125 ksi (862 MPa) Tensile Strength (Composition similar to UNS S30100)		

RATIONALE

AMS5517N is the result of a Five-Year Review and update of the specification. The revision updates composition reporting (see 3.1.2), adds strain rate requirements for tensile testing (see 3.3.1.2), revises allowable hardness testing procedures (see 3.3.2 and 8.2), clarifies bend test method requirements (see 3.3.3), and prohibits unauthorized exceptions (see 3.3.1.1, 3.6, and 8.5).

1. SCOPE

1.1 Form

This specification covers a corrosion-resistant steel in the form of sheet and strip 0.005 inch (0.13 mm) and over in nominal thickness.

1.2 Application

These products have been used typically for parts requiring moderate drawing or forming, but usage is not limited to such applications.

1.2.1 Mechanical properties specified herein are obtained by cold working (strain hardening) and not by heat treatment. Therefore, the cold-worked product should not be heated to a temperature that adversely affects the mechanical properties or corrosion resistance before, during, or after fabrication.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

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## 2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

AMS2242	Tolerances, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium and Titanium Alloy Sheet, Strip, and Plate
AMS2248	Chemical Check Analysis Limits, Corrosion- and Heat-Resistant Steels and Alloys, Maraging and Other Highly Alloyed Steels, and Iron Alloys
AMS2371	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS2807	Identification, Carbon and Low-Alloy Steels, Corrosion and Heat-Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing
AS7766	Terms Used in Aerospace Metals Specifications

## 2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, [www.astm.org](http://www.astm.org).

ASTM A370	Mechanical Testing of Steel Products
ASTM A751	Chemical Analysis of Steel Products
ASTM E140	Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness
ASTM E290	Bend Testing of Material for Ductility

## 2.3 Definitions

Terms used in AMS are defined in AS7766.

## 3. TECHNICAL REQUIREMENTS

### 3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM A751 or by other analytical methods acceptable to the purchaser.

**Table 1 - Composition**

Element	Min	Max
Carbon	--	0.15
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	16.00	18.00
Nickel	6.00	8.00
Molybdenum	--	0.75
Copper	--	0.75

### 3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.1.2 The producer may test for any element not listed in Table 1 and include this analysis in the report of 4.4. Reporting of any element not listed in the composition table is not a basis for rejection, unless limits of acceptability are specified by the purchaser.

### 3.2 Condition

Solution heat treated, descaled unless solution heat treatment is performed in an atmosphere yielding a bright finish, and cold rolled.

### 3.3 Properties

The product shall conform to the following requirements, determined in accordance with ASTM A370:

#### 3.3.1 Tensile Properties

Product 0.005 inch (0.13 mm) and over in nominal thickness shall have the properties shown in Table 2.

3.3.1.1 Mechanical property requirements for product outside of the range covered by 1.1 shall be agreed upon between the purchaser and producer and reported per 4.4.1.

**Table 2 - Minimum tensile properties**

Property	Value
Tensile Strength	125 ksi (862 MPa)
Yield Strength at 0.2% Offset	75 ksi (517 MPa)
Elongation in 2 Inches (50 mm) or 4D	25%

3.3.1.2 Unless otherwise specified, the strain rate shall be set at 0.005 in/in/min (0.005 mm/mm/min) and maintained within a tolerance of  $\pm 0.002$  in/in/min ( $\pm 0.002$  mm/mm/min) through 0.2% offset yield strain. After the yield strain, the speed of the testing machine shall be set between 0.05 in/in and 0.5 in/in (0.05 mm/mm and 0.5 mm/mm) of the length of the reduced parallel section (or distance between the grips for specimens not having a reduced section) per minute. Alternatively, an extensometer and strain rate indicator may be used to set the strain rate between 0.05 in/in/min and 0.5 in/in/min (0.05 mm/mm/min and 0.5 mm/mm/min). The requirement for compliance becomes effective for material produced 1 year after the publication date of this specification.

### 3.3.2 Hardness

Hardness for product 0.005 inch (0.13 mm) and over in nominal thickness shall be not lower than 25 HRC or equivalent (see 8.2). Product shall not be rejected on the basis of hardness if tensile properties of 3.3.1 are acceptable, determined on a specimen taken from the same sample as that with nonconforming hardness or from another sample with similar nonconforming hardness.

### 3.3.3 Bending

Product shall be tested in accordance with ASTM E290 using a sample prepared nominally 0.75 inch (19.0 mm) in width with its axis of bending parallel to the direction of rolling and shall withstand without cracking when bending at room temperature through the angle and bend diameter shown in Table 3. Either test method may be used. In case of dispute, the results of tests using the guided bend test of ASTM E290 shall govern.

**Table 3 - Bending parameters**

Nominal Thickness Inches	Nominal Thickness Millimeters	Type of Bend	Angle Degree, Min	Bend Factor
Up to 0.050, excl	Up to 1.27, excl	Free Bend	180	1
Up to 0.050, excl	Up to 1.27, excl	V-Block	135	2
0.050 and over	1.27 and over	Free Bend	90	2
0.050 and over	1.27 and over	V-Block	135	3

### 3.4 Quality

The product, as received by the purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the product.

### 3.5 Tolerances

Shall conform to all applicable requirements of AMS2242.

### 3.6 Exceptions

Any exceptions shall be authorized by the purchaser and reported as in 4.4.1.

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1 Responsibility for Inspection

The producer of the product shall supply all samples for the producer's tests and shall be responsible for the performance of all required tests. The purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to specified requirements.